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ABSTRACT

The use of microcomputers to teach underprepared readers at the City University of New York (CUNY) is the focus of this report. A review of the literature highlights both the instructional and the noninstructional uses to which computers are being put in the college reading classroom today. The report points out (1) that software is a problem, since there are few commercially available packages for use with poorly prepared readers; and (2) that although a few faculty have attempted to remedy this situation by developing appropriate programs, most CUNY reading teachers lack the time and resources to create software that encourages thinking, decision making, and writing as distinct from the usual drill and practice variety. Guidelines are presented for evaluating new commercial reading packages, and the concluding section suggests several approaches that colleges and universities might use to help their reading faculty choose or develop appropriate computer software and integrate it into their courses. Lists of references and resources to which the busy reading teacher can turn for assistance complete the report. (RBW)

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MICROCOMPUTERS AND TEACHING READING IN COLLEGE

ISSUES AND SOME CUNY APPLICATIONS

November 1984

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Office of Academic Affairs
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MICROCOMPUTERS AND TEACHING READING IN COLLEGE

Some Issues and CUNY Applications

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I. INTRODUCTION

Five years ago, a colleague and I surveyed the reading programs at the seventeen undergraduate colleges of The City University of New York (CUNY). At that time, Professor Clara Alexander was the only reading coordinator who reported the experimental use of computers to reinforce reading skills at her college, Medgar Evers. In the few short years since then, the computer as a reading tool has become a significant concern of reading faculty throughout the country as well as at our University. Today, over half of CUNY's colleges are using computers in their programs, and most are considering future use.

Professor Alexander's present report reflects this considerable interest in utilizing computers in reading programs and indicates, as well, a wide gap between the actual uses and projected uses of computers. Reading faculty throughout the country appear to have far more complicated dreams for computers as teaching tools than they have specific ideas for development of software and implementation of programs. Money for development is, of course, a factor. However, different theoretical models of the reading process and different perceptions of students' needs may also contribute to this gap.

In the survey of CUNY's reading programs five years ago, for example, we found considerable diversity in the ways the seventeen colleges approached the task of introducing academically underprepared students to those reading and study skills that will help them compete successfully in the mainstream of their colleges. It is important to understand the differences in theoretical models before we look at the possible uses of computers in the college reading classroom. Different pedagogical approaches to the teaching of college reading derive from different theoretical bases: one is a skills approach; the other is a psycholinguistic approach.

The skills model, which has been accepted for nearly half a century, is based on the theory that a beginning reader learns to match sounds and letters and combine phonics with other word attack skills to decipher words. The reader then proceeds from reading words independently to reading sequences of words or sentences and then to understanding the meaning of a whole passage. Adult learners who have not previously acquired these skills are diagnosed and taught the specific skills they have not mastered. The model hypothesizes three levels of comprehension: literal (main idea and supporting facts), inferential (ideas based on facts but not directly stated), and critical (judgments based on the facts and inferences).

Reading programs based on the skills model emphasize individual diagnosis and teaching of skills in sequential order by utilizing workbooks and drill materials. The materials used for college students differ from materials designed for younger readers. However, they still generally follow the word, sentence, and paragraph analysis sequence which leads to comprehension of a passage. More advanced courses may include the application of study skills to content areas. A series of study skills are identified such as note-taking, outlining, summarizing, and preparing for examinations. Such courses might include instruction in special study formulas such as the SQ3R method (surveying, questioning, reading, writing, and reviewing) to facilitate studying from text books.

More recently, psycholinguistic models of reading have influenced the curriculum of reading programs. These models hypothesize that reading is a process in which readers construct meaning depending on their prior knowledge, level of conceptual development, and what they want to know. Proponents believe that successful reading is an active process in which readers continually test their choices against the developing meaning and asking themselves if what they are reading makes sense. The proficient reader does not have to identify every word or "cue" but must monitor choices and correct them when they do not produce meaning. Psycholinguists have studied readers' errors or "miscues" in oral reading and have developed a scheme used to make qualitative judgments about students' reading. This process, known as "miscue analysis," is a diagnostic tool. Another diagnostic tool used to test comprehension is the "cloze" procedure in which words are deleted from a passage (through a mechanical process such as leaving out every 5th or 10th word) so that the reader has to supply the missing words based on the context of the passage. The cloze procedure can be adapted to curriculum materials in order to focus the reader's attention on the semantic and syntactic components of a passage.

Probably the most significant impact psycholinguistic models of reading have had on reading programs is the focus on background knowledge of readers and the content of reading materials. Curriculum is developed to build on the reader's background knowledge through the utilization of materials from subject matter college courses. The aim is to expand underprepared students' conceptual framework, while simultaneously introducing them to the learning skills necessary to cope with college level work. In addition, some programs integrate writing and reading skills, reflecting the perception that encoding (writing) and decoding (reading) interact.

Even before computers came on the scene, the skills model utilized commercial workbook-type texts more readily than did the psycholinguistic model. It is much harder to develop commercial exercises that are integrated with specific course materials and encourage open-ended written responses than to develop more of the familiar format of multiple-choice and fill-in-the-blank questions typical of workbooks.

Although the skills approach is reflected in many college reading texts used throughout the country, the psycholinguistic approach, which includes concepts such as metacognition and schema theory, is frequently advocated in current professional literature and conferences. Metacognition refers to the reader monitoring his or her own progress. Schema theory, derived from cognitive psychology, considers the integration of the background knowledge of the reader with what the reader derives from a text. Some see these approaches as contradictory; others find some common ground in the two approaches.

Nevertheless, I believe that the lack of agreement on a theoretical base for college reading programs, as reflected in national journals as well as in a monograph resulting from a seminar series for CUNY reading faculty (College Reading, 1983), account for some of Professor Alexander's findings in this report. Moreover, in the reading profession as well as in other professions, there is a wide gap between what people profess and what, in fact, they do. This should be kept in mind when we discuss decisions about computer applications in the reading classroom.

Alexander's report is useful both to college reading teachers and to administrators as they begin to make these decisions. It describes present uses of computers in college reading programs, projected uses as articulated by reading faculty, methods for evaluating software, and ways in which faculty and administrators can become more knowledgeable about reading and computers.

Throughout her report, Alexander refers to the fact that most available software is of the drill and practice variety for teaching reading sub-skills. In contrast, she reports the desire of reading faculty for software which encourages thinking and decision-making. In addition, reading faculty want programs that encourage writing about reading through summarizing, paraphrasing, analysis, and synthesis.

Some of the most promising uses of computers in reading classes may come from software not specifically developed for reading improvement. For example, in Alexander's interviews, the potential of word processing software is mentioned by several reading specialists for analysis of text and combining reading and writing skills. In addition, data base programs can be used to reinforce skills of organizing and categorizing information. Moreover, tutorial programs, developed for the sciences and social sciences, can be used to expand students' background knowledge to help them read complex college texts.

It is important that reading teachers examine their theoretical models, curriculum goals, and classroom practices to ensure appropriate uses of computer technology. Teachers must examine those skills and abilities which may be best taught with computers, remembering that different students learn differently and that ultimately the goal is carry-over to the real reading tasks which confront college students.

Lila Soll
Baruch College

II. AIMS OF STUDY AND METHODOLOGY

This report discusses the applications of microcomputers in college reading programs, with specific focus on The City University of New York (CUNY). It explores the uses of microcomputers to improve the reading abilities of underprepared college students as well as to manage reading programs. It raises some pedagogical questions and suggests some avenues of further exploration for college faculty interested in integrating computers into the reading curriculum.

My approach was to examine computer journals, newsletters and periodicals, reading journals, and ERIC's Computer Search Reprint on computers and reading and to note the names and activities of those educators who use computer software to strengthen the reading skills of college students. Next, I contacted as many persons as possible from these sources--by letter or telephone. I examined the literature on the applications of computers in teaching college reading in other postsecondary institutions. I also contacted selected persons whose names appeared repeatedly in the literature or those, at all teaching levels, who are very active in computers and education. Since my focus was on CUNY, I sought information from members of the CUNY Association of Reading Educators (CARE) and members of the various developmental/remedial/compensatory, English, and Academic Skills departments of CUNY's colleges. This report does not claim to be exhaustive of what is being done in the area of reading and computers on the college level. My aim is simply to share the information and ideas I have gathered primarily at CUNY with those who are interested in improving the reading skills of college students. Specifically, I will be looking at:

- how computers can improve student learning,
- how computers can be used in college reading classes,
- which types of software are being used in CUNY college reading classrooms and elsewhere,
- what are the non-instructional uses of computers,
- how reading software is evaluated,
- what relationships exist between reading theory and uses of computer software in college reading classes.

III. GENERAL USES OF COMPUTERS FOR STUDENT LEARNING

In addition to the "truism" that students enjoy working on computers, preliminary research indicates some support for the idea that computers are a useful supplement to reading classes:

> The advantages of active rather than passive learning, individualization, immediate correction, graphic reinforcement, intensive time on task, and the capability for complex record keeping are as valuable in the teaching of college-level reading as in any other field. Today's challenge is to find and implement the best uses of current CAI capability, while we search for new uses. The success our students enjoy will motivate them as learners and us as teachers and programmers.
>
> (Grinols, 1984)

H. Wendell Thompson (1980) reports that teacher-developed computer assisted instruction (CAI) modules used as supplements to classroom instruction were found to improve the reading comprehension of remedial reading students at Alabama A&M University, which services a predominantly Black student population. The report of an independent auditor found that a five-year CAI program which serviced economically poor, Black, and other minority students in basic skills development helped those students make greater gains than those students who did not have this supplementary instruction (Kester, 1982).

Forman (1983) did a search of the literature and found that students who use computer assisted instruction improved in learning rate or learned at the same rate as those in traditional settings. Further, the effect on achievement occurred regardless of the type of computer assisted instruction used, or the age range of the students (an important factor for those colleges serving older populations). Forman also notes that when computer assisted instruction and traditional instruction are compared, equal or better achievement is obtained in less time by using computer assisted instruction. This time factor is key to our older population as noted above. Forman also found that students have been found to have positive attitudes toward CAI.

IV. ARE COMPUTERS APPROPRIATE IN COLLEGE READING CLASSES?

In his updated edition of Computer Applications in Reading, George E. Mason (1983) describes the uses of computers in reading classrooms and the recommendations made by classroom teachers, reading specialists and clinicians on ways in which computers could be used in reading classes. While most of the book does not refer specifically to college reading classes, many of the suggestions are important. Currently, "the vast majority of language arts computer programs are still of the drill and practice variety, designed only to teach basic vocabulary and spelling.... Few truly innovative instructional programs have been developed...."(p. 140). Recommendations for innovative uses include teachers using word processing in reading classes, developing their own software, and training "poor readers to do programming in a computer language as a type of remedial reading instruction" (p. 104). Karen Foley (1983) of MICRO, a special-interest computer group of the International Reading Association, enthusiastically recommends teaching students to program as a means of developing comprehension. She says that, "programming... is strongly recommended for enhancing reading comprehension skills, independent work habits," and other skills as well.

The six major categories of software used in college reading classes are drill and practice, tutorials, simulation and gaming, interactive texts, word processing, and elementary computer programming.

Drill and practice continues to be the most common application. It is used to supplement previous instruction, further develop previously learned skills and concepts, and check on students' performance. The ideal drill and practice session provides immediate feedback to students. If the answer is correct, it is reinforced in some way. Some commercial programs simply say, "Good, (name)!" or "Correct!", "Super!", or "Congratulations!" In contrast, however, Blum (1982) writes that research shows that it is best to build in feedback after incorrect answers only. If the answer is wrong a good program will immediately inform the students and tell them why the answer is wrong, or it will give them a hint to help them determine the correct answer. If students persist in wrong answers of the same type, a good program will branch to another section which may give users additional lessons, strategies, hints, and/or practice in that particular concept. Branching is one of the unique and desirable features of computers.

Tutorials are programs which represent the teaching mode and according to Educational Productions Information Exchange's (EPIE) "Glossary of Computer Terms for EPIE Courseware Evaluators," they can be used successfully by students without teacher assistance. Users are given the rules and/or concepts they need to learn the content. Mastery is measured by some type of quiz or test. There is some interaction between users and the program, and the computer's response is shaped by the students' input. A unique feature of a program in tutorial form is that it is endlessly patient. A well-designed program will allow students to repeat the lesson or 'tutorial' as many times as they need to, and it has a built-in provision for help should the students need it. This approach also offers opportunities to practice and apply the new skill or concept, immediate feedback and branching when necessary, a record-keeping system, and a progress reporting system.

Simulation or gaming allows students to imitate the "real world" through the use of a computer. Users interact in an environment which ordinarily would be too expensive, too time consuming, or too complicated for classroom use. Gaming permits students to apply the skills and concepts they have learned in another setting in a game-like environment. They learn and apply rules, evelop and revise strategies and compete with themselves, the program, and their peers. These applications encourage students to use skills and concepts already learned in a new context. They learn to develop new strategies to solve problems. Unfortunately, Mason notes some resistance on the part of teachers to use "gaming" programs for instructional purposes (1983, p. 195). Nevertheless, such programs as "Rocky's Boots," and "Storymaker" are interesting and may have potential for use in college reading classrooms.

Interactive text programs allow students to read part of a story, pretend they are a character in the plot and make decisions which ultimately affect the plot's outcome. This encourages students to read actively, to analyze the text, and to infer what the character should do; an example is Robert Lafore's software package, "Interactive Fiction" (Doyle, p. 145).

While word processing programs are primarily used in writing classes, reading faculty are projecting creative uses in the reading classroom and laboratories as well. As Robert Levin and Claire Doyle discovered in their Learning Lab, students who worked at word processors, "saw" their work clearly, and this may have implications for reading as well as for writing improvement (p. 77).

The psycholinguistic model of reading acknowledges the integration of listening, speaking, reading, and writing. Successful reading teachers have long integrated reading and writing because in academic life and in the workplace, we read and synthesize/analyze/respond to what we have read by some type of writing which is done for someone else to read. In real life, we do not read passages and answer multiple-choice questions. With word processors, students can create their own "experience stories/essays" and build personalized word banks. They can become authors for their peers and develop deeper understanding of the comprehension process, by discussing their meaning and intent. As Moffett has found, they can discuss what made sections clear or incoherent, thus becoming "aware of how texts are created"(p. 24). Claire Doyle uses word processors in her reading and writing lab and contends that they help "preserve the wholeness of the reading and writing process and nurture the development of the process in our students"(p. 145).

Some educators see teaching students computer programming as a way to improve their reading skills. The relationship of computer programming and reading skills is intriguingly presented by Martin Kling of Rutgers University (1984) who says that computer programming and reading "have the same scope and sequence of skills" and that 60 to 70 percent of the skills required for programming and reading are essentially the same. Harriet Johnson (1983) of Hunter College affirms this close relationship in her paper, "Reading Comprehension Skills and Computer Literacy." Critical to computing as well as to reading, she believes, is "the importance of students' schemata, manipulating grammatical structures, unpacking dense reading material and breaking it down into chunks, understanding vocabulary, and bringing prior knowledge to the text..."

At colleges and universities throughout the country, faculty are asking if students who need to refine their basic language skills of reading, thinking, and writing benefit by using the computer. Johnson believes that even using computers in basic reading classes gives students a type of computer experience. Many developmental students, she says, who are "kept out of" regular college-level courses are using computers while they are shoring up their reading skills. Mary Fjeldstad of LaGuardia Community College also thinks that students who use computers have an edge when applying for jobs.

Some faculty may wonder why so many people are interested in introducing computers into college reading classes. Part of this appeal is due to the several advantages of using computers in these classes. The average age of CUNY students is about twenty-seven. Many are highly motivated heads of households who are driven by a sense of having no time to waste. However, they are required to take remedial reading classes because their incoming test scores show that they need to develop their basic reading skills in order to do satisfactory college-level work.

Reinhardt Kussat (Borough of Manhattan Community College) feels that there are affective advantages as well. He and Fjeldstad agree that students are enthusiastic about using the computer and find it "fun" or as Johnson says, "It engages students." Fjeldstad observes that often our basic skills students come to us with "a feeling of failure." They are "hesitant in class" and find the privacy afforded by using computers assuaging to their self-concepts. She admits that the "thrill wears off" but feels that the benefits far outweigh this. So important to people who are accustomed to being "marked wrong" is that computer tutors react to students' <u>responses</u>, not to the students as <u>persons</u> (Ross & Campbell, 1983).

Because many of today's students are older, many are not subsidized by parents and therefore must hold jobs. In addition, large numbers are heads of households and have children, so they do not have much time. In order to use the limited computer resources in college labs as well as fulfill their personal obligations, students must learn to organize and budget their time wisely. This is one of the first study skills taught by reading specialists since using time well is important in becoming a successful student (Kirschenbaum & Perri, 1983). Ellen Leahy, (formerly of Bronx Community College) lists other advantages of having reading students use computers: they develop a level of computer literacy and further, since many are parents, using the computer gives them something to share with their children, many of whom are also using computers as learning aids in their elementary and secondary schools.

Because time is such an important factor in the lives of older students, they are anxious to complete their basic skills courses so that they can enter the academic mainstream. Forman (1983) refers to Kearsley's observation that "almost all comparative studies of CAI have shown that it reduces the time required for a subject by 25-50 percent while still resulting in the same end performance" (p. 131). This observation is supported by the findings of evaluators of the program at Los Angeles Southwest College (Kester, 1982).

If this is indeed the case, it would be useful to explore the kinds of CAI found to be most effective.

Desirable computer programs are interactive and self-correcting. Garson (1983) believes an important advantage of using computers in reading programs is that students can often get immediate feedback on their responses to questions from the computer. They do not have to wait until their teachers grade their papers. Teachers can use their time to plan special activities for selected students or simply work with groups or individuals. According to Roblyer (pp. 34-39) computers can provide graphics to explain difficult concepts such as interpreting illustrative materials in such a clear manner that students will be more likely to remember how to read these materials.

An additional advantage is that some computer programs can diagnose students' needs and prescribe particular materials. For the instructor, a program which generates reading tests, scores them, and analyzes and records students' progress is a great time-saver. Haskell Indian Junior College reports that their computer managed instruction (CMI) program was used to record and provide reports on student achievement, schedule students' assignments and tests, analyze data, prescribe learning activities, and record students' progress. Havlicek (1982) reports that the features of "preassessment, formative and summative testing," and "directed learning" enabled them to determine that the students in this CMI program "showed significantly greater gains on reading than students in regular reading classes."

Of distinct advantage is the type of reading software program which determines the level at which students should begin by a placement test of some type and which branches to various activities in response to the students' input (Bialo, 1983). This provides the type of individualization to which most reading instructors are dedicated.

While the advantages may be impressive, there are disadvantages as well. Cost, unimaginative uses which merely substitute screen for page, and transfer of skills from screen to print are some of the problems. In addition, funding for technology [of this type] is generally limited, so use is limited to targeted groups; some students must be left out. Budget is a definite problem and Mason (1980, pp. 18-22) echoes this concern when he cites the high initial cost of setting up a reading program which utilizes computers. The problem seems to lie in funding the start-up costs. However, Kester (1982) found that over a five-year period at Los Angeles Southwest College, the use of CAI contributed to significant dollar savings, and according to Forman (1983, pp. 120-126), several researchers have found CAI to be cost effective. She cites those who compare the increase in traditional instructional costs and inflation with the costs of CAI. This kind of statistic, however, leads to another disadvantage. As Lorraine Beitler of New York City Technical College says, "As more computers are brought into the classrooms and labs, many educators are becoming... fearful that the computer will replace them." The problem of faculty attitude must be faced in considerations of instituting computer technology in any classrooms.

Another disadvantage is the tendency to use the computer screen as a textbook. Mason (1980) questions using the screen simply to read lots of text. Students should "interact with" the computer, "not just read it," he believes; furthermore, "it would seem to be cheaper to display pages of text in books rather than on the screen" (p. 18).

Judy Wambu of LaGuardia Community College has a related concern that effective transition strategies be devised to move students from reading on the computer to reading print. She says that there must be real transfer of skills from the electronic medium to the printed page. This concern is echoed throughout the literature on computers and the language arts. Claire Doyle warns that:

> There are numerous software programs, now marketed, designed to pick apart the writing and reading process and reduce it to its smallest parts. These electronic workbook programs aim to instruct students in the craft of writing and reading and are really not much different than their predecessors--the programmed text-workbook. Granted, there are apparent benefits to the use of drill-and-practice microcomputer software. There is immediate feedback, a patient machine, branching possibilities, and record-keeping bonuses. However, the carryover of these exercises into students' own writing and reading behaviors is highly questionable. There are few software programs which retain the dignity and wholeness of the reading and writing process, and enhance the learning necessary to master this process.
>
> (1983, pp. 144-145)

As Doyle indicates, a problem with most existing language arts software is this tendency to pick apart the reading and writing processes in ways which are not beneficial to the learning process.

At this point, let us take a look at some potential non-instructional uses of computers in the reading classroom.

V. NON-INSTRUCTIONAL USES OF COMPUTERS

Computers are currently serving important functions in management of classes and reading labs as well as helping teachers develop readability measures and utilize authoring systems. The computer can provide a management system which helps teachers keep records of their students' strengths, weaknesses, time on task, and scores. This type of program collects and analyzes student data or student responses, and in some cases, diagnoses and prescribes special activities for users.

Some programs come with, or allow teachers to construct a test data bank from which teachers can obtain randomly selected test items. Others administer standard tests and score them, diagnose strengths and weaknesses based on the test performance, and prescribe specific activities and materials for students. According to Mason's Computer Applications in Reading (1983, pp. 32-34), an exemplary management system is used by Florida State University. In another place, Mason (Oct. 1980, pp. 18-22), writes:

> Computers can perform a great variety of functions, such as displaying text, diagrams, and pictures, and controlling video tapes. Computers can play games, give and score tests, deliver diagnoses, recommend prescriptions, and provide tutorials, drill-and-practice sessions, and dialogue (Mason and Blanchard, 1979). Computers can provide management for school and college reading programs. Computers also stimulate pupils so that teachers can practice instructional skills. We have learned how to group for CAI instruction (Lawrence, 1976) and how to allocate terminal time to students (Atkinson, 1974).

Two other non-instructional uses of computers are readability measures and authoring systems. Readability measures are programs which use one or more readability formulas to give teachers the grade level of some desired reading material. This feature is used across the curriculum, not only in reading classes. One example is Writer's Workbench System, developed by Bell Labs. Another is the STAR readability program, developed by General Motors, which gives a Flesch index and a Dale score.

Authoring systems are commercial programs which enable teachers to write their own reading programs without having any knowledge of computer programming. Users are restricted, however, to the format set by the producer. Some examples are MrGraw-Hill's Course Authorizing System, Author +, Boeing S/T3, PC/Pilot, and Easy learn.

Now let us discuss some of the ways in which computer software is actually used in some college reading programs.

VI. COMPUTER SOFTWARE IN SOME CUNY READING PROGRAMS AND ELSEWHERE

Very few commercial reading programs have been designed with underprepared readers in college. Judy Wambu, who has evaluated over a hundred reading software programs for Educational Products Information Exchange (EPIE), has found little that suits college students taking reading courses. Anne Bradstreet Grinols (1983, p. 46) concurs: "At the college level, available software appears to focus on specific word attack skills (Wedman, 1983, p. 642). As areas of development, multilevel comprehension and critical reading ability have been largely ignored."

Alfred Bork who has made important contributions to CAI at the Educational Technology Center of the University of California at Irvine stated in a letter to the author (April, 1983), that he was rather pessimistic about the availability or quality of "today's available software to help reading." When she was Director of the Learning Center at Bronx Community College, Ellen Leahy reviewed much of the language arts software available but she found no commercial program "totally appropriate for reading." Mary Fjeldstad, formerly a systems analyst, says that so far she has found no commercial software which she would use with her LaGuardia basic skills students.

However, individual colleges have developed some successful programs for their own use.

Students in basic reading classes at Bronx Community College use Bergen Evans' Wordcraft Vocabulary Program, published by Communacad. One component of this "BCC Micro-CAI Wordcraft Program" requires students to take weekly vocabulary tests. The Learning Lab staff developed a computerized testing program to ensure that students took the weekly tests and also to save class teaching time for activities other than vocabulary testing. This faculty-developed program is on several disks and includes a general review test and fourteen 50-item weekly tests. Each of the weekly tests covers five lessons from Wordcraft. Steve O'Neill, also at Bronx Community, likes the economy of class time, the immediate feedback which students get, and the information provided to students on their progress.

Hal Rand developed a tutorial program, "BCC Micro-CAI Dictionary," to be used by remedial reading students at Bronx Community College's Learning Laboratory. The program aims to help underprepared college readers use a dictionary effectively. Students get immediate feedback to their responses as well as a printout of their performance during a particular lesson and are encouraged to study missed words. Faculty may also get printouts of each student's performance. All students use the same edition of Webster's New World Dictionary with this program. Sample activities and feedback from the program follow:

DICTION 2

V O C A B U L A R Y B U I L D I N G
LESSON #2 - ABBREVIATIONS
BRONX COMMUNITY COLLEGE
B.C.C.

ONE WORD MAY BE USED MANY DIFFERENT WAYS.

EXAMPLE

WATER IS GOTTEN FROM A WELL.
SHE DOESN'T FEEL WELL BECAUSE
SHE HAS A COLD. - - -
WELL, WHY DON'T YOU DO IT IF YOU WANT TO?

THEREFORE, WHEN YOU LOOK UP A WORD
YOU DON'T KNOW, YOU HAVE TO KNOW
HOW THAT WORD IS USED.

IF ONE WORD IS USED IN MORE THAN
ONE WAY, THE DICTIONARY WILL INDICATE
THIS BY GIVING ABBREVIATIONS OF THE
PARTS OF SPEECH BEFORE THE DEFINITION.

THE MOST COMMON DEFINITION IS GIVEN FIRST.

This section is what would be called the tutorial because it attempts to teach the student user.

YOU SHOULD MEMORIZE THE LIST
OF ABBREVIATIONS FOR THE PARTS OF
SPEECH ON PAGE VIII OF YOUR DICTIONARY.

DIRECTIONS

TURN TO PAGE VIII OF YOUR DICTIONARY.

THE COMPUTER WILL GIVE YOU AN
ABBREVIATION. YOU MUST TYPE IN
THE CORRECT WORD OR WORDS
THAT THE ABBREVIATION STANDS FOR.
THEN PRESS THE RETURN KEY.
YOU MUST SPELL CORRECTLY.
YOU WILL BE GIVEN 2 CHANCES TO ANSWER
CORRECTLY.

THEN, YOU WILL BE GIVEN THE CORRECT
ANSWER.

YOUR INCORRECT AND CORRECT ANSWERS
WILL APPEAR ON YOUR PRINT-OUT.

GOOD LUCK!!!

The abcve section represents the directions given to student/users.

```
QUESTION 1
WORD:  ADJ.
YOUR ANSWER:  ADJECTIVE
CORRECT!
THE CORRECT ANSWER IS:  ADJECTIVE

QUESTION 2
WORD:  N.
YOUR ANSWER:  NOUN
CORRECT!
THE CORRECT ANSWER IS:  NOUN
```

The questions and answers above show what happens when student/users answer correctly. Questions 3 and 4 below, however, illustrate feedback to an incorrect response. Students are given the question again and if incorrect the second time, they are told the correct answer.

```
QUESTION 3
WORD:  ADV.
YOUR ANSWER:  ADJECTIVE
INCORRECT!
```

Since the student did not answer correctly, Question 3 is presented again:

```
QUESTION 3
WORD:  ADV.
YOUR ANSWER:  ADVERSE
INCORRECT!
THE CORRECT ANSWER IS:  ADVERB
```

Since it's clear that the student did not simply make a typo the first time, the program gives the correct answer.

```
QUESTION 4
WORD:  PREP.
YOUR ANSWER:  PREPPIE
INCORRECT!
(Now it is presented again,)
```

QUESTION 4
WORD: PREP.
YOUR ANSWER: PREPOSITION
CORRECT!
THE CORRECT ANSWER IS: PREPOSITION

Faculty who are interested in using the "BCC Micro-CAI Wordcraft Program" and the "BCC Micro-CAI Dictionary" should send one blank diskette for each with a stamped self-addressed diskette mailing envelope to: Learning Center, Bronx Community College of the City University of New York, University Avenue and West 181 Street, Bronx, New York 10453.

Anita Podrid, Reading Coordinator at Queens College has submitted a proposal to secure funds to develop her own software. She too, has had considerable programming experience. In her reading program, faculty are using a teacher-made diagnostic test which measures such skills as context, main ideas, and inferences. Students are tested and prescriptions are written for them. In tutoring sessions, students practice test-taking skills which saves classroom time for other activities. The practice tests use the same format as the CUNY skills assessment test and inform students why answers are right or wrong.

The CAI Lab at Medgar Evers College houses six different reading programs from Computer Curriculum Corporation but, to date, only two have been used on a limited basis. One of those is, "Reading For Comprehension," a drill and practice program which covers analysis of word structure, vocabulary development, literal and interpretive comprehension of written prose, and word-study skills, and the other is "Critical Reading Skills." The latter program is designed for secondary school level readers who function at grades 7 to 9. Students read passages from a reader and then answer comprehension questions on the terminal. A sample frame from the comprehension component in which students have to read an excerpt from Stevenson's Treasure Island is shown here:

3. Before he becomes aware of the stranger, the captain seems to feel:

a. unhappy and ill at ease
b. anxious and confused
c. tired from his walk
d. active and healthy

Student Answers: a.
No. Before he is aware of the stranger, the captain marches across the room for his breakfast. This is not the way a man who is unhappy and ill at ease would act. TRY AGAIN.

The student/user inputs "a" as the correct answer and gets the above explanatory feedback. It is difficult to answer the question without having read the passage; however, in this particular case the feedback practically gives away the answer.

There is also an optional vocabulary development component. Unknown words are presented in context, and students must select the definition from a given set of four words. Here is a sample from the vocabulary unit:

PRECISE

1. As they removed the fossils from the earth, the scientists took careful and [precise] measurements. They wanted completely accurate information. When something is precise, it is---.

    a. exact
    b. slow
    c. vague

2. A surgeon must use her hands [precisely] when she operates on a patient. "Precisely" means---.

    a. quickly
    b. clearly
    c. accurately
    d. warmly

3. If a measurement is [precise], it is---.

    a. precious
    b. exact
    c. confused
    d. difficult

Reinhardt Kussat has used the Minnesota Educational Computer Consortium (MECC) authoring program, "MECC Instructional Design," at Bronx Community College to develop several programs based on the needs of his students. At one point, he found that his students needed some intensive work on identifying the parts of speech, so he used the authoring program to develop exercises to help them. He also developed a drill and practice program using signal words which helps students anticipate what the balance of a passage is about after seeing a "signal word" or phrase such as "furthermore," "on the other hand," and "in other words." While this authoring system allows multiple-choice responses only and is confined to working within the 8-line parameters, Kussat says he is relatively pleased with it. A sample of Kussat's drill and practice on identifying subjects follows:

Directions: Identify the subject in each of the sentences below.

1. As Abraham Maslow has pointed out, biological needs tend to be dominant over psychological motives.
_____ a) Maslow b) needs c) dominant d) motives

2. Since hunger is one of the most interesting of the primary drives, we will examine it in detail.
_____ a) hunger b) drives c) we d) detail

3. Many people experience hunger as an overall feeling of weakness that does not seem to be associated with the stomach.
_____ a) people b) hunger c) weakness d) stomach

4. Recent evidence suggests that the liver responds to a lack of bodily "fuel" by sending nerve impulses to the brain, thus triggering eating.
_____ a) evidence b) liver c) "fuel" d) impulses

5. As the research on overeating suggests, hunger is affected by a number of factors in addition to actual bodily needs for food.
_____ a) research b) hunger c) number d) factors

6. When a person is afraid, we observe that the hands tremble, the face contorts, and posture becomes tense and defensive.
_____ a) person b) we c) hands d) face

Since Fjeldstad has found no reading software which she likes, she and a colleague at LaGuardia Community College, John Holland, are developing a test-taking practice module for those students who must re-take the CUNY reading test. Instead of attending special workshops, students will be able to work at their own rate and schedule. They began field-testing the program in the Summer 1984 semester. Fjeldstad has also just completed a proposal to develop a program using the microcomputer to teach students how to write summaries.

Ira Epstein, Chairman of the Communication Skills Program at LaGuardia believes that cloze exercises and readability programs are potentially useful, although he does not name a specific program. Martin Kling of Rutgers University Reading Center and Ronald Topham of Brookdale Community College feel that Milliken's "Cloze Plus" reading software, designed for elementary and secondary school readers, is adequate for basic skills college readers. Cloze exercises have several benefits. Students must read the passages in order to answer the questions. Cloze exercises also can measure a student's ability to comprehend connected prose and construct meaning across sentences. This program is, however, a limited-choice system, and thus has inherent limitations.

The CUNY reading faculty is not alone in experiencing frustrations in trying to discover and develop useful software and create networks for sharing information on the uses of computers in college reading. In the summer of 1983, the State Board for Community College Education in the state of Washington conducted a research project to gather information on what its community colleges were doing with computer assisted instruction, to which seven colleges of the twenty-seven responded. The questionnaire included all facets of computer instruction, but I have culled only those components pertinent to this report.

In response to a question on how microcomputers are used for instructional purposes, one college reported that it is researching software applicable to its lab and students, and another college reported that is has three instructional programs. These programs were written at the college and include a program on SQ3R, ten "readings from Sports Illustrated magazine with accompanying vocabulary and comprehension questions," and a post-test on the use of prefixes and suffixes. The college which developed the study skills lessons and Sports Illustrated reading program also developed and uses a computer management system in its reading lab.

Most of the respondents had not yet developed any goals and objectives regarding the use of computers in their instructional program, but one indicated that they were interested in using microcomputer learning modules to supplement their instructional program, and another indicated that they were investigating what is available or for use in their reading laboratory. Not one respondent indicated that word processors were being used for instructional purposes in reading, although one has plans for instituting them in the Writing Laboratory. The general tone was cautionary, suggesting colleges are exploring and investigating.

Alan Torgerson (July, 1983), Project Director of the Learning Assistance Support System Project in Washington, writes that the northwest region has formed a consortium which will be involved in such activities as "reviewing

commercial software and providing guidelines for teacher-made material." They have already established a computerized bulletin board system to identify software which can be shared. Only two are reading software--the SQ3R program referred to above, written by Larry Silverman and a readability program housed at Wenatchee Valley College.

At Bergen County Community College in New Jersey, Lou Piccinino expressed the excitement generated by the improvement in academic performance in terms of GPA and retention of basic skills reading students. The faculty authored their own tutorial reading program for use on an IBM mainframe, using the skills approach, covering literal and interpretive comprehension, critical analysis, logical reasoning, and speed reading. They use a management system and an "electronic roll book" to service the 3,000 students with whom they have worked over the past two years. Piccinino commented that their CAI reading program is highly interactive and does not rely on the drill-and-practice multiple-choice format. For example, students are asked to look for key phrases and type them in or to type in the word(s) indicating causal relationships.

On the whole, however, it is clear that creativity has not been a hallmark of many commercial programs. Present computer applications in basic reading college classes seem to cluster around testing, vocabulary development, comprehension skills, and study skills. These are basically compatible with a skills approach to teaching reading. Some of the faculty I surveyed had authored their own programs and many had submitted proposals for funding to develop programs. Many of these faculty clearly want to see more computer applications to reading which are compatible with a psycholinguistic approach, including programs which:

- stimulate thinking and decision-making through interaction,
- require students to write about their reading by summarizing and/or paraphrasing,
- use word processors to strengthen reading skills,
- develop background knowledge in students who have read little prior to coming to college, and
- use a programming language to enhance students' comprehension skills.

Most literature about the common uses of computer software in reading programs pertains to pre-collegiate levels, but some of this information is helpful in planning the introduction of computers in postsecondary reading classes. Fernekes and Hyman (1983, pp. 18-25) report that "the emphasis [in the classroom] is solely on software for drill and practice..." (p. 23). Wedman (1983, p. 642) looked at 32 catalogues from computer program producers and book publishers and found that most available reading programs were for word attack skills such as phonics, structural analysis, context analysis, and dictionary usage. Of the 95 programs categorized as "comprehension," 68 were actually vocabulary development programs. There are 19 programs for literal comprehension and eight for interpretive comprehension. Under study skills,

Wedman found five on organizing, and five on interpreting illustrative materials.

It seems clear even from this limited report that there is not much available for use in college basic reading skills classes. Many faculty do not have the initiative, time, resources, and support to develop materials and programs suited to the needs of their particular students, and one wonders why commercial producers and publishers are not attempting to meet the needs of reading faculty. I asked five publishers' representatives about this dearth of software for reading and their plans for the future. Their responses were courteously cautious. The general response was that while of course they are interested, they have not seen anything yet, or they are just setting up procedures to cover the college market, or they are waiting to see if there is a demand for materials for this group. A member of the college division of a major publishing house told me that to date, they "have not located any projects" and although they are "just getting into the developmental area... [they are] very interested in hearing what people want to produce... and purchase."

College reading faculty and administrators definitely should have an impact on the kinds of software being produced commercially. But first, they must learn how to become good evaluators of existing software.

VII. EVALUATING READING SOFTWARE

Because college reading faculty are generally critical of existing commercial software, it is essential that they become knowledgeable software evaluators themselves. We can find other people's evaluations just about everywhere today--in supermarket magazines, newspapers, computer newsletters, magazines and journals, and in reading journals and newsletters. Most respected are the evaluation reports of certain agencies and consortia which specialize in appraising educational software. Such agencies are CONDUIT, which rates software for postsecondary students; EPIE, which works in partnership with the Consumer's Union (publisher of Consumer Reports); Minnesota Educational Computing Consortium (MECC), a consortium of public school organizations in Minnesota; and MICROSIFT, based at the Northwest Regional Laboratory in Portland, Oregon. Each of these organizations uses its own criteria, but these criteria have basic similarities.

This section on evaluating reading software is adapted from "What You Should Know About Computer Software Evaluations" by Roblyer (1983), who synthesized the criteria used by the major evaluators mentioned above. An evaluator should keep in mind the following considerations:

1. General Program Structure includes the subject of the program, age and ability levels, hardware needed, field test data, number of lessons in a module or lesson, number of disks, support materials, and approximate "disk working time" (EPIE, 1983).

   This information will help you to evaluate whether it is practical to use the program. If, for example, a producer claims that it is appropriate for reading levels 3-adult, you can form your own conclusions. If there are no support materials such as a manual or follow-up reproducible materials, this may or may not be important. How long does it take to make a disk? Given the time restrictions of college reading classes, is this program practical?

2. Instructional Design includes: statement of objectives of the program, appropriateness of "scope, sequence, and depth of treatment" (EPIE), clarity of presentation (are instructions to users clear?), relevance to your reading program, readability of the materials for the target group, and the utilization of the special capabilities of the computer such as graphics, sound, quality of the screen display, and printer. (Sometimes printers are used to give students reports or materials for further study.) Quality of the screen display and the way the text is formatted are also important to instructional effec iveness.

3. Feedback should be immediate and positive. It should not scold or punish users for wrong answers. One program which this writer reviewed had the following feedback: "That's not it!!!" "That's still not it!!!"

   Feedback should remediate. For example, if students' answers are incorrect, the program should branch to a portion of the program which corrects the misunderstanding. The same program which had the negative feedback, ironically upon a third incorrect response to the same question, led students to a highlighted portion of the text which

contained the desired answer. There is mixed opinion on feedback to a correct answer. Some programs are too enthusiastic, "SUPER!," "GREAT!", "GOOD!," or "CONGRATULATIONS!" This type of feedback after each correct response eventually inures users against the comments.

4. Graphics should be used to enhance learning or at the least to motivate users. Simply having graphics is not necessarily a plus. Sound should not be obnoxious (which it often is) nor disturb others. Users should have the option to turn it off.

5. Student and Teacher use addresses the quality and amount of control which students and teachers have in using the program. Evaluators look for such things as what can student users elect/select and how much creativity is involved? How much control do teachers have? Can they individualize activities on the program to meet the needs of different students? Can they input content which is relevant to their reading program goals (such as specialized vocabulary)? Reviewers generally point out the lack of creativity in the following format which characterizes much reading software:

---

four or five lines of text

Type in the letter next to the best answer.

a. _____

b. _____

c. _____

d. _____

A clear example of teacher control can be seen in Apple Missing Links by Sunburst Communications. Teacher options are:

Which option do you want to change? _____

1. The number of players
2. The book that is selected
3. The passage that is selected
4. The format in which the passage is presented
5. The maximum number of guesses allowed before the program fills in the letter.
6. The number of guesses each player receives per turn in the two-player game
7. Sound in the program

By typing in the number of the option, teachers can then change whatever is desired. For example, they may decide that they only want students to play in pairs, so they type in #1 and change the number of players to 2.

Some examples of student/user control are that they may opt to have more directions to perform a certain task, may select the passage they will read, may select the format, or may choose to repeat a lesson, take a test, or stop work altogether (exit). Teachers may have such options as changing individual students' activities in a particular program or limiting what they may do. In Speed Reader II, a new speed/comprehension program, users may choose the speed at which text is shown from 100 to 2,000 words per minute and whether to take or skip the quiz at the end of each lesson. The teacher/evaluator must decide how sensible it is to offer an option of reading 2,000 words per minute since the average college student reads only about 280 words per minute.

6. Content refers to the "quality of the information taught to students" (Roblyer). This includes potentially controversial methodology, sexual, racial, or ethnic bias or sterotyping of any kind, accuracy of facts or data given and validity. Do the contents measure what the objectives purport to teach? It is important also to make sure that grammar and spelling are correct. In other words, just as we read critically, we must view computer programs the same way.

7. Management System must be looked at to determine if there are placement tests which help evaluate where users should begin in a program. There should be some type of formative and/or summative tests which measure the achievement of the objectives. In addition, when evaluating, one must determine whether records of students' input (work) are kept and what type of reporting system is provided for users and for the teacher. Each should get a report, either on the screen or on paper. Here is a sample report from Speed Reader II.

-SCOREBOARD-

Total questions
Number correct
Comprehension score
Total elapsed time

After students are given their score, they have the option of going on to a new reading passage, repeating the same one, or ending the lesson.

Here is a report which teachers get when using the Wordcraft program.

WORDCRAFT TEST

NAME:

STUDENT #:

SECTION #:

NAME OF TEACHER:

Name of Test : WIL2I

# of Correct Answers : 46

# of Spelling Errors : 1

LIST OF INCORRECT WORDS

38,Dense,42,Aspect,44,Mutter,50,Ascend.

LIST OF MISSPELLED WORDS IN CORRECT RESPONSE

46,Question Face-To-Face

From this excerpt you can see the kind of detail which teachers can get on their students' performance.

Potential users should evaluate whether directions for using the management system are clear and whether the system is easy to use. Ideally, there should be some provision for teachers to add instructional material which is pertinent to the course objectives.

In Speed Reader II, for example, there is an "Editor" feature which allows teachers to write in their own passages and questions for their students:

SPEED READER II EDITOR

The prompt line at the bottom of the screen displays the editor commands. For help, use the ".h" command.

1- Teachers input the first line of their text next to numeral 1. Upon doing that, "2-" will appear and they are prompted to enter the next line next to that numeral.

8. Technical aspects pertain to the "quality of programming" (Roblyer), and even though reviewers may know nothing about programming, they can evaluate the technical end by determining whether there are any "bugs", elements of the program which do not work the way they are supposed to. An example of a programming "bug" is the following: A user types in a word in answer to a question. Instead of typing in "immediate" the student types in "immediately," but before pressing the RETURN button (which tells the computer what was typed in) sees the mistake and corrects it, making the answer "immediate." A program with a "bug" might still consider the answer incorrect because, somehow, it registered that the student typed in 11 keys the first time instead of 9. This can happen in an otherwise sound program. This type of "bug" in a software program can be quite discouraging to students.

In summary, to evaluate a piece of reading software, teachers must look at the structure of the program. How many lessons, modules, or disks are there? Are there support materials such as reproducible work-sheets or record forms? How much time is required to get through a lesson? Look at the instructional design which basically refers to the stated objectives--what your students should be able to do as a result of having worked in this program. Are these objectives important to the objectives of your reading program? How clearly is material presented? Does the material and do the activities lead to the achievement of the stated objectives? How clearly can you read the material on the screen? Do graphics and sound facilitate learning? What kind of feedback is given? Does it remediate? Is it positive? Does the program branch to another section when students continuously get incorrect answers?

How much control do teachers and students have? What activities can they select to do? Can teachers input their own material for their students' use? Is there room for any divergent thinking on the part of students? Is the content free of racial, ethnic, or sexual bias or stereotyping? Are all facts and data accurate? What about grammar and punctuation? Is there a management system? Do students and teachers get reports? Does the system remember the

records or are they forgotten each time? Can teachers get printouts of their students' performance?

The technical quality of the program is as important at its instructional quality. Are there any annoying "bugs?" How much will they interfere with achievement of the instructional objectives? In addition, has the program been adequately field tested?

Finally, remember these simple questions: "What can this program do that I do not do too well?" "What can this program do that takes me much too much time?" "How will this program facilitate the achievement of the objectives of my reading program?" "Will this program encourage students to read real text?"

VIII. CONCLUSION

As I was working on this report, I realized that the more I read, questioned, and investigated, the more there was to learn. Should computers be used in the college reading classroom and, if so, how? What structure and software are appropriate to a particular philosophy of teaching reading? How does one get software? Where does one go to learn about computers (without taking computer science courses)? Are there any books and periodicals which would be helpful? Are there resource centers to which I may have access?

In my own view and the views of most of my colleagues, there is not much software currently available for use in college reading classes. This may be due to several factors: lack of equipment and resources in reading programs, newly-awakened interest of college reading teachers in computers, and lack of demand for reading software. There is a happy side to this, however. If teachers create a demand, producers and publishers will develop what teachers want. If teachers themselves insist upon writing reading software programs, the educational quality will be higher, provided they work in a team with experienced programmers.

In other words, the field of computer software and college reading programs is wide open and quite exciting. Caution should be exercised, however, to avoid the institution of wholesale changes in reading programs. The new technology should be introduced with care, with a plan, and with sound pedagogical bases. Reading faculty should not wait for someone else to develop the kinds of materials which are appropriate for their students. They must get involved. And administrators must provide support for faculty who are trying to learn and innovate, by structuring computer literacy workshops, allotting space for a microcomputer hands-on center for faculty, and providing some money in the budget for hardware and software for the college reading program.

College-wide and university-wide efforts should be launched to help college reading faculty choose or develop appropriate computer software and integrate this into their courses. Some possible steps follow:

1. Each campus could conduct a series of volunteer computer literacy workshops. Denyse Forman (1983) reports that a study conducted by Chambers and Bork found that one of the major roadblocks to the successful implementation of any CAI program was the teachers' lack of knowledge about computer assisted instruction.

   The CUNY Association of Reading Educators held two workshops in 1984 on computer assisted instruction at which some reading faculty suggested that their colleagues who have resisted computers or who have some fear of them would willingly attend such literacy workshops at their own college sites.

   Literacy in this case need only involve some understanding of the parts which make up a system, some familiarity with what can be done to "input" and to get "output," some familiarity with common terms, and for the brave, knowing a computer language and the rudiments of how it works. Bronx Community College blocked out two

days for computer workshops and review of reading software programs. Faculty's fears or phobias were allayed by this experience.

Essential to any literacy workshop for reading faculty should be removal of the "math mystique" which many associate with computers.

2. Each campus, as well as CUNY's Instructional Resource Center, should set up a computer software resource room. Martha Bell of Brooklyn College said that she is sure that one of the reasons that the faculty of their Department of Education Services is so enthusiastic regarding use of computer software is that they have a room "with all kinds of computer resources" and can have a variety of experiences with applications such as graphics and word processing. They have self-teaching programs, and much software to review and use.

   Fjeldstad also said that administrators should "give [teachers] experience with it. People are too busy and overworked" to go out of their way to find out about something which most of their colleagues are not using. Podrid expressed the conviction that teachers should be encouraged to use labs which have computer software. She feels that once faculty see what can be done, they will be enthusiastic. Kussat echoes the above sentiments when he says that each college should set up "stations with programs and let [faculty] play with them." Leahy warns, however, that in the beginning, it might be a good idea to screen out those programs which are clearly and absolutely inappropriate. This is good advice because many reading teachers do not bother to look at reading software because all they hear is that there is nothing good. The attitude is, then, "Why waste time with something unfamiliar when I like what I'm doing, anyway?"

   Essential to this recommendation--obviously--is that colleges which service basic reading skills students must have equipment and resources to explore this medium. Paul Panes of Queensborough Community College has suggested that the reading program or lab of each college be given a microcomputer for its exclusive use. Several reading faculty or administrators have suggested that often there is competition between the units and departments of colleges for hardware (computer system) dollars. Wambu recommends that faculty should "at least see the state of the art. Many are interested in text editing but haven't seen or looked at any software." In order to do this, faculty need hardware and software resources.

3. Set up a central information exchange on literature on reading and computers, available public domain software, and available faculty-developed software. This exchange might be located at one of the colleges or at CUNY's Instructional Resource Center. Faculty from all units of CUNY and from private colleges in other areas should be able to come to this center to read, view programs, make copies of public domain programs for a small fee, and leave copies of their own programs. This would not preclude each campus having a mini-version of the same service, but a consortium of several

colleges in one central location would provide greater service. This central information service should in turn affiliate with special interest groups such as the Reading and Computers Committee of the New Jersey Reading Association. Ernest Balajthy of the Association has already begun a public domain software exchange for interested reading teachers.

4. Integrate the computer into the college basic skills reading program cautiously. Everyone interviewed referred to the tremendous potential of computers in the reading class. Ira Epstein feels that "artificial intelligence is where the potential lies" and Steve O'Neil envisions computer programs developed cooperatively between reading teachers and content area teachers who will supply "key concepts" of their discipline. Many teachers are not waiting for something to happen. They are taking first steps by writing proposals for funding to get the time, equipment, and personnel to work on pilot projects.

In addition, at CUNY at least, we are beginning to see support for the idea of using microcomputers in the teaching of basic skills. The 1984-85 budget for CUNY includes $850,000 to purchase microcomputers for use in basic skills instruction.

But there are cautions. People often laugh at educators for "jumping onto bandwagons." As John Jay's Lorelle Guyden says, "In education, there are 'hot' fields." Computers are 'hot' today, and for this reason I believe that we should set up pilot programs before making total large-scale commitments to computerize reading programs.

Pilot programs should also be set up to determine the effectiveness of the use of computers in teaching reading comprehension:

- What reading skills can effectively be taught by the computer?
- Can thinking and decision-making skills be taught through computer use and, if so, how?
- Do drill and practice exercises carry over to college reading tasks?
- How can word processing be utilized to improve students' summarizing and paraphrasing skills?
- How can word processing be utilized to improve students' skills of synthesis and analysis?
- Does learning to program improve reading comprehension?
- How can computers be used as data bases to broaden the background knowledge of students who may have large gaps in their academic preparation?

Reading teachers must not be driven by what computers can do most easily but by their own philosophy and curricular goals. If they believe in a psycholinguistic approach to teaching reading, they will have to develop or

help develop appropriate software. If, however, they believe in a skills approach, they will have an easier time finding and developing such software. This software must be carefully evaluated for carryover into college reading tasks. While those of us who believe in a psycholinguistic approach need to develop innovative materials to utilize the comuter as a tool, we should nevertheless not totally dismiss drill and practice materials. Some discrete skills may be best learned by some students through computerized drill and practice which may improve their college reading performance. Moreover, many of the drill and practise materials were developed to facilitate the decoding process, which may still be linked to comprehension problems for some college students. Meanwhile, all college reading teachers need to become familiar with and comfortable with computers in order to make rational decisions about their usefulness in college reading programs.

IX. APPENDIX A

A SHORT LIST OF THINGS WHICH A BUSY PERSON MIGHT DO

A. Groups, Organizations

Join a local or regional organization such as Reading and Computers Committee of the New Jersey Reading Association. Contact:

Bette Kindman-Koffler
6 Harper Road
Monmouth Junction, NJ 08852

Dr. John Cowen
1081 Trafalgar Street
Teaneck, NJ 07666

This committee is very active and can put you in touch with other reading teachers of all levels. Members are also building a library of public domain software which can be copied.

Send for a free publications brochure from: International Council for Computers in Education (ICCE), University of Oregon, 1787 Agate Street, Eugene, Oregon 97403. The brochure offers inexpensive educational booklets which may be purchased.

Plan a day's outing with some colleagues to visit the Eastern Pennsylvania Regional Resources Center, 200 Anderson Road, King of Prussia, Pennsylvania 19406, (215) 265-7321. According to Ernest Balajthy, "They have hundreds of programs available, with shelves full of reading/language arts materials" (Bits and Bytes Bulletin, January, 1984). Balajthy recommends calling for an appointment and mentions that they have several different types of microcomputers on site for use in reviewing the programs. What's a research day for, anyway? Balajthy also writes that the Educational Testing Service in Princeton, New Jersey "allows teachers to preview Apple software." To get more information, call Bill Nemceff, (609) 734-5607.

Minnesota Educational Computing Consortium (MECC) is limited to Minnesota schools, but you can send for their catalogue of materials and their newsletter, Users, which lists workshops and conferences which are open to everyone. They also market their own software which is quite highly regarded. Unfortunately, emphasis is on elementary with some secondary materials. Their address is 2520 Broadway Drive, St. Paul, Minnesota 55113.

The special interest group, Computer Users In Education, exists to encourage computer use in elementary and secondary classrooms. Members exchange ideas and methodology. Write for more information on how you can help each other to: Association for Computing Machinery, 1133 Avenue of the Americas, New York, New York 10036. (Don't let the word 'machinery' turn you off.)

B. Periodicals

Subscribe to The Computing Teacher, the journal of the International Council for Computers in Education mentioned above. It is recommended in almost everything you will read. A one-year subscription is $21.50. Write to: ICCE, University of Oregon, 1787 Agate Street, Eugene, Oregon 97403.

T.H.E. Journal is also recommended. For one thing, it is free to educators. Write to: T.H.E. Journal, Reader Service Dept., P.O. Box 364, Arlington, Massachusetts 02174.

Bits and Bytes Bulletin is the newsletter of the reading and computer committee of the NJRA. It is chock full of information related to reading and computers. Write to: Dr. Ernest Balajthy, Beaver College, Education Department, Glenside, Pennsylvania 19038.

Microcomputers in Education journal costs $33.00 a year, but subscribers get a 10% discount on all software purchased through the QUEUE catalogue, a service of the journal. Subscribers also may preview software for 30 days free. QUEUE claims to be "the oldest distributor of educational software in the world" (QUEUE Catalogue #14). Send for Catalogue #9 which contains more secondary and college level materials. For catalogues and subscriptions, write to: QUEUE, Inc., 5 Chapel Hill Drive, Fairfield, CT 06432, 1-800-232-2224.

CRLA (Computers Reading & Language Arts) is a relatively new journal which specializes in reading and language arts. Write to: CRLA, Dept. P, P.O. Box 13247, Oakland, CA 94661.

The International Reading Association also has a reading and computers group, but I have only received two newsletters from them since last year. You might write to the following address to get information from them about the newsletter which was called Micro Missive. Address: MICRO, P.O. Box 166, New Almaden, CA 95042. If you don't get an answer, write directly to the International Reading Association, 800 Barksdale Road, Newark, DE 19711 and ask for information on any reading and computers special interest groups.

C. Readings

The first thing I recommend that you do is have your college librarian order an ERIC computer search on reading and computers for college students. Some descriptors might be: computer assisted instruction, reading comprehension, technology, remedial reading, computer managed instruction, higher education, or 2-year colleges. You will think of others according to your interest. While you're waiting...

The very best book for me has been RUN: Computer Education edited by Dennis O. Harper and James H. Stewart, published in 1983 by Brooks/Cole Publishing Co., Monterrey, CA. This book is full of useful information.

The only other readings I shall recommend in this paper will be those related to evaluating software:

. EPIE has a microcomputer software report. Write to EPIE Institute, P.O. Box 620, Stony Brook, NY 11790. If you get no answer, write to EPIE Institute, Teachers College, Columbia University, Box 27, New York, NY 10027.

. Evaluators Guide for Microcomputer-Based Instructional Packages is published by ICCE. Send a check for $2.50 to ICCE, c/o Department of Computer and Information Science, University of Oregon, Eugene, OR 97403. This book includes a detailed evaluation form.

. If you send a self-addressed stamped envelope to Frank Christ, Learning Assistance Center, California State University at Long Beach, 1250 Bellflower Boulevard, Long Beach, CA 90840, he will send you a 31-question evaluation form which is used to evaluate PLATO software.

You will have to go to the library to find the following articles:

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